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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,566	02/11/2004	James J. Estrada	07844-620001	6004

21876 7590 04/09/2007
FISH & RICHARDSON P.C.
P.O. Box 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
HSIEH, BRANDON	
ART UNIT	PAPER NUMBER
2128	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/777,566	ESTRADA, JAMES J.	
	Examiner	Art Unit	
	Brandon Hsieh	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☒ Claim(s) *7, 10-12, 24 and 27-29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *02/11/2004*.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-3, 8-14, 17-20, 25-31, 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 10, 12, 13, 14, 17, 18, 27, 29, 31, 34 state "modeling" which should be –modeling--. Appropriate correction is required.

Claim 2 recites "receiving the second power law function that was generated in the preceding iteration" in lines 2-3. There is insufficient antecedent basis in the claim. It is unclear how the second power law function was generated in the preceding iteration.

Claim 3 recites "the first iteration" in line 1. There is insufficient antecedent basis in the claim.

Claims 8 and 25, the term "a modifying parameter" is vague and indefinite. It is unclear how "a modifying parameter" is generated and whether or not a parameter is modified.

Claims 9 and 26 recites the term "optimizing" which renders the claim indefinite.

Claim 19 recites "receiving the second power law function that was generated in the preceding iteration" in lines 2-3. There is insufficient antecedent basis in the claim.

It is unclear how the second power law function was generated in the preceding iteration.

Claim 20 recites "the first iteration" in line 1. There is insufficient antecedent basis in the claim.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-34 are rejected under U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

In claims 1 and 17, analysis of the claims indicates that the method for modeling a non-linear transfer function is merely an abstract idea as claimed, because the claims fail to achieve a tangible result.

In claims 1 and 17, "generating an auxiliary function" and "calculating a modelling error" are merely mathematic steps. "Setting the termination flag" is merely an abstract idea and doesn't provide any "real world" result.

In claim 18 and 34, "an information carrier" in accordance with applicant's specification (see page 21 lines 8), may be a propagated signal. This subject matter is not limited to that which falls within a statutory category of invention because it is no limited to a process, machine, manufacture, or a composition of matter. Instead, it

includes a form of energy. Energy does not fall within a statutory category since it is clearly not a series of steps or acts to constitute a machine, not a tangible physical article or object which is some matter to be a product and constitute a manufacture, and not a composition of two or more substances to constitute a composition of matter.

Any claims not specifically addressed, above, is being rejected as incorporating the deficiencies of a claim which it depends.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5, 8-9, 15-22, 25-26 and 32-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Haruki et al. (U.S. Pat 4,969,045).

Consider claim 1, Haruki et al. discloses a method for modelling a non-linear transfer function with a power law function **(col. 2 lines 52-57, the use of determining gamma correction function (power law function) is for modeling a non-linear transfer function)**, the method comprising:

receiving a transfer function **(col. 16, lines 19-23, gamma correction value γ_o which represents correction function)**;

and iteratively, until a termination flag is set **(col. 16, lines 19-23, the a continuous change of the gamma correction values, the use of flag for indicating the event or the result of comparing two values in FIG. 6, elements 236-240)** :

receiving a first power law function **(gamma correction value γ)**;

generating an auxiliary function from the transfer function and local differences between the transfer function and the first power law function **(col. 16 lines 38-42, the difference of γ_o and γ is determined)**;

fitting a second power law function **(col. 16, lines 19-23, a new γ is given during a continuous change of the gamma correction values)** to the auxiliary function **(the difference of γ_o and γ)**;

calculating a modelling error **(the absolute value of ($\gamma - \gamma_o$))** from the second power law function **(new γ)** and the transfer function **(γ_o)**; and

setting the termination flag when the modelling error is less than a predetermined value **(col. 16 lines 38-43, the gamma correction values are changed only when error is greater than predetermined value, therefore a flag is set when the error is less than a predetermined value, see FIG. 6 elements 236-140)**.

Consider claim 2, Haruki et al. discloses the method of claim 1, wherein: receiving the first power law function **(gamma correction value γ)** in a given iteration **(col. 16, lines 19-23, the a continuous change of the gamma correction values)** comprises receiving the second power law function **(col. 16, lines 19-23, a new γ is given during a continuous change of the gamma correction values)** that was

generated in the preceding iteration **(col. 16, lines 19-23, the a continuous change of the gamma correction values)**.

Consider claim 3, Haruki et al. discloses the method of claim 1, wherein: receiving the first power law function **(gamma correction value γ)** in the first iteration **(col. 16, lines 19-23, the a continuous change of the gamma correction values)** comprises receiving a power law function generated by fitting the transfer function **(col. 16, lines 19-23, a new γ is given during a continuous change of the gamma correction values)**.

Consider claim 4, Haruki et al. discloses the method of claim 1, further comprising:

counting the number of iterations; and

setting the termination flag when the number of iterations exceeds a maximum number of iterations **(col. 16 lines 17-18, during the process of a continuous change of the gamma correction value, the gamma correction value is changed n times and then the process stops which means the process counts the numbers of iteration and stops after a maximum number (n) of iterations)**.

Consider claim 5, Haruki et al. discloses the method of claim 1, wherein: the transfer function is a transfer function for gamma correction **(col. 16, lines 19-23, gamma correction value γ_o which represents gamma correction function)**, and the first and second power law functions are power law functions having a form of c x^{β}, wherein x is the input variable of the power law functions, and c and β are real numbers (**It is well-known in the art that a power law functions having a form of c**

x^{β}, wherein x is the input variable of the power law functions, and c and β are real numbers).

Consider claim 8, Haruki et al. discloses the method of claim 1, further comprising:

using a modifying parameter **(the parameter is "1" which is multiplied by the difference of γ_o and γ, col. 16 38-42)** to weight the local differences between the transfer function and the first power law function **(col. 16 lines 38-42, the difference of γ_o and γ)**; that are used to generate the auxiliary function **(the difference of γ_o and γ)**.

Consider claim 9, Haruki et al. disclose the method of claim 8, further comprising: optimizing the modifying parameter **(the parameter is "1" which is multiplied by the difference of γ_o and γ, col. 16 38-42)**.

Consider claim 15, Haruki et al. discloses the method of claim 1, wherein: receiving a transfer function comprises receiving a plurality of transfer function values **(col. 16, lines 19-23, gamma correction value γ_o which represents gamma correction function)**.

Consider claim 16, Haruki et al. discloses the method of claim 1, wherein: receiving a transfer function comprises receiving a piecewise continuous monotonically increasing transfer function **(FIG. 10 and 11 which show the characteristics for a gamma correction functions).**

Consider claim 17, Haruki et al. discloses a method for modelling a non-linear transfer function with a power law function **(col. 2 lines 52-57, the use of determining gamma correction function (power law function) is for modeling a non-linear transfer function)**, the method comprising:

receiving a transfer function **(col. 16, lines 19-23, gamma correction value γ_o which represents correction function)**;

fitting the transfer function with an approximating power law function **(gamma correction value γ) (col. 16 lines 3-6 where the γ_o and γ are compared in order to determine new γ (fitting), see FIG. 6 elements 236-140)**; and iteratively, until a termination flag is set **(col. 16, lines 19-23, the a continuous change of the gamma correction values, the use of flag for indicating the event or the result of comparing two values in FIG. 6, elements 236-240)**.

reflecting the approximating power law function about the transfer function to generate an auxiliary function **(col. 16 lines 38-42, determining the result (an auxiliary function) of the difference of γ_o and γ (reflecting))**;

fitting the auxiliary function **(the difference of γ_o and γ)** with a new approximating power law function **(col. 16, lines 19-23, a new γ is given during a continuous change of the gamma correction values)**;

calculating a modelling error **(the absolute value of (γ - γ_o))** from the new approximating power law function **(new γ)** and the transfer function **(γ_o)**; and

setting the termination flag when the modelling error is less than a predetermined value **(col. 16 lines 38-43, the gamma correction values are changed only when error is greater than predetermined value, therefore a flag is set when the error is less than a predetermined value, see FIG. 6 elements 236-140)**.

Consider claim 18, Haruki et al. discloses a software product **(the apparatus in FIG. 1)**, tangibly embodied in an information carrier, for modelling a non-linear transfer function with a power law function **(col. 2 lines 52-57, the use of determining gamma correction function (power law function) is for modeling a non-linear transfer function)**, the software product comprising instructions operable to cause one or more data processing apparatus to perform operations comprising:

receiving a transfer function **(col. 16, lines 19-23, gamma correction value γ_o which represents correction function)**;

and iteratively, until a termination flag is set **(col. 16, lines 19-23, the a continuous change of the gamma correction values, the use of flag for indicating the event or the result of comparing two values in FIG. 6, elements 236-240)** :

receiving a first power law function **(gamma correction value γ)**;

generating an auxiliary function from the transfer function and local differences between the transfer function and the first power law function **(col. 16 lines 38-42, the difference of γ_o and γ is determined)**;

fitting a second power law function **(col. 16, lines 19-23, a new γ is given during a continuous change of the gamma correction values)** to the auxiliary function **(the difference of γ_o and γ)**;

calculating a modelling error **(the absolute value of (γ - γ_o))** from the second power law function **(new γ)** and the transfer function **(γ_o)**; and

setting the termination flag when the modelling error is less than a predetermined value **(col. 16 lines 38-43, the gamma correction values are changed only when error is greater than predetermined value, therefore a flag is set when the error is less than a predetermined value, see FIG. 6 elements 236-140)**.

Consider claim 19, Haruki et al. discloses the software product of claim 18, wherein:

receiving the first power law function **(gamma correction value γ)** in a given iteration **(col. 16, lines 19-23, the a continuous change of the gamma correction values)** comprises receiving the second power law function **(col. 16, lines 19-23, a new γ is given during a continuous change of the gamma correction values)** that was generated in the preceding iteration **(col. 16, lines 19-23, the a continuous change of the gamma correction values)**.

Consider claim 20, Haruki et al. discloses the software product of claim 18, wherein:

receiving the first power law function **(gamma correction value γ)** in the first iteration **(col. 16, lines 19-23, the a continuous change of the gamma correction values)** comprises receiving a power law function generated by fitting the transfer function **(col. 16, lines 19-23, a new γ is given during a continuous change of the gamma correction values)**.

Consider claim 21, Haruki et al. discloses the software product of claim 18, further comprising instructions operable to cause one or more data processing apparatus to perform operations comprising:

counting the number of iterations; and

setting the termination flag when the number of iterations exceeds a maximum number of iterations **(col. 16 lines 17-18, during the process of a continuous change of the gamma correction value, the gamma correction value is changed n times and then the process stops which means the process counts the numbers of iteration and stops after a maximum number (n) of iterations).**

Consider claim 22, Haruki et al. discloses the software product of claim 18, wherein: the transfer function is a transfer function for gamma correction **(col. 16, lines 19-23, gamma correction value γ_o which represents gamma correction function)**, and the first and second power law functions are power law functions having a form of c x^{β}, wherein x is the input variable of the power law functions, and c and β are real numbers (**It is well-known in the art that a power law functions having a form of c x^{β}, wherein x is the input variable of the power law functions, and c and β are real numbers).**

Consider claim 25, Haruki et al. discloses the software product of claim 18, further comprising instructions operable to cause one or more data processing apparatus to perform operations comprising:

using a modifying parameter **(the parameter is "1" which is multiplied by the difference of γ_o and γ, col. 16 38-42)** to weight the local differences between the

transfer function and the first power law function **(col. 16 lines 38-42, the difference of γ_o and γ)**; that are used to generate the auxiliary function **(the difference of γ_o and γ)**.

Consider claim 26, Haruki et al. disclose 26.The software product of claim 25, further comprising instructions operable to cause one or more data processing apparatus to perform operations comprising:

optimizing the modifying parameter **(the parameter is "1" which is multiplied by the difference of γ_o and γ, col. 16 38-42)**.

Consider claim 32, Haruki et al. discloses the software product of claim 18, wherein: receiving a transfer function comprises receiving a plurality of transfer function values **(col. 16, lines 19-23, gamma correction value γ_o which represents gamma correction function)**.

Consider claim 33, Haruki et al. discloses the software product of claim 18, wherein: receiving a transfer function comprises receiving a piecewise continuous monotonically increasing transfer function **(FIG. 10 and 11 which show the characteristics for a gamma correction functions).**

Consider claim 34, Haruki et al. discloses a software product **(the apparatus in FIG. 1)**, tangibly embodied in an information carrier, for modelling a non-linear transfer function with a power law function **(col. 2 lines 52-57, the use of determining gamma correction function (power law function) is for modeling a non-linear transfer function)**, the software product comprising instructions operable to cause one or more data processing apparatus to perform operations comprising:

receiving a transfer function **(col. 16, lines 19-23, gamma correction value γ_o which represents correction function)**;

fitting the transfer function with an approximating power law function **(gamma correction value γ) (col. 16 lines 3-6 where the γ_o and γ are compared in order to determine new γ (fitting), see FIG. 6 elements 236-140)**; and iteratively, until a termination flag is set **(col. 16, lines 19-23, the a continuous change of the gamma correction values, the use of flag for indicating the event or the result of comparing two values in FIG. 6, elements 236-240)**.

reflecting the approximating power law function about the transfer function to generate an auxiliary function **(col. 16 lines 38-42, determining the result (an auxiliary function) of the difference of γ_o and γ (reflecting))**;

fitting the auxiliary function **(the difference of γ_o and γ)** with a new approximating power law function **(col. 16, lines 19-23, a new γ is given during a continuous change of the gamma correction values)**;

calculating a modelling error **(the absolute value of (γ - γ_o))** from the new approximating power law function **(new γ)** and the transfer function **(γ_o)**; and

setting the termination flag when the modelling error is less than a predetermined value **(col. 16 lines 38-43, the gamma correction values are changed only when error is greater than predetermined value, therefore a flag is set when the error is less than a predetermined value, see FIG. 6 elements 236-140)**.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 6 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haruki et al. (U.S. Pat 4,969,045) in view of Haider et al. (U.S. Pub 2004/0267854).

Consider claims 6 and 23, Haruki et al. discloses the method of claim 5 and the software product of claim 22, wherein:

fitting the second power law function **(col. 16, lines 19-23, a new γ is given during a continuous change of the gamma correction values)** to the auxiliary function **(the difference of γ_o and γ)**.

However, Haruki et al. fails to disclose fitting a linear function to a logarithmic representation of the auxiliary function which is the process of "fitting the second power law function to the auxiliary function" in the logarithmic domain.

Haider et al. disclose a converter that performs a logarithmic conversion for input signal (a function) ([0077]-[0078]).

They are analogous art because they both are related to gamma correction (Haider et al., see [0076], FIG. 9).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the logarithmic conversion of Haider et al. for

the gamma correction apparatus of Haruki et al. because Haider et al. teaches logarithmic conversion could simplify mathematical calculations ([0002]).

9. Claims 13 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haruki et al. (U.S. Pat 4,969,045) in view of Wu et al. (U.S. Patent 6,076,964).

Consider claims 13 and 30, Haruki et al. discloses the method of claim 18 and the software product of claim 1, wherein:

calculating the modelling error for the second power law function comprises calculating a error between the transfer function and the second power law function

However, Haruki et al. fails to disclose using a total square error technique to calculate the error.

Wu et al. disclose using a total square error technique to calculate a error for a non-linear dynamic model (abstract, col. 4 lines 52-64).

They are analogous art because they both are related to model a non-linear function (Wu et al., see abstract, col. 4 lines 52-64).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilizea total square error technique of Wu et al. for the model of non-linear transfer functions of Haruki et al. because Wu et al. teaches the model parameters can be found by minimizing the total square error (col. 4 lines 62-64).

10. Claims 14 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haruki et al. (U.S. Pat 4,969,045) in view of Lum et al. (U.S. Patent 5,398,076).

Consider claims 14 and 31, Haruki et al. discloses the method of claim 18 and the software product of claim 1, wherein:

calculating the modelling error for the second power law function comprises calculating a error between the transfer function and the second power law function

However, Haruki et al. fails to disclose using a maximum absolute difference technique to calculate the error.

Lum et al. disclose using a maximum absolute error technique to calculate an error with and without gamma correction (col. 5 lines 21-45).

They are analogous art because they both are related to model a non-linear function (Lum et al., see col. 2 lines 48-68 where a gamma correction is implemented in order to correct the non-linearity of a signal which is transformed to a function).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilizea a maximum absolute error technique of Lum et al. for the model of non-linear transfer functions of Haruki et al. because Lum et al. teaches a maximum absolute error could be an indicator for the performance of gamma correction process (col. 5 lines 21-45).

Allowable Subject Matter

9. Claims 7, 10-12, 24 and 27-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all

of the limitations of the base claim and any intervening claims, and assuming any issues relating to 112 and 101 rejections can be resolved.

The applicant discloses a method for modelling a non-linear transfer function with a power law function.

In this instance the prior art of record does not explicitly disclose the claimed elements relating to calculating and minimizing a least square error in claim 7 and 24, determining an optimal modifying parameter in claims 10-12 and 27-29.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandon Hsieh whose telephone number is (571)-270-1320. The examiner can normally be reached on Monday-Friday, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571)-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brandon Hsieh
Examiner
Art Unit 2128

BH

KAMINI SHAH
SUPERVISORY PATENT EXAMINER